We claim:

1. A method for reducing the extent of protease degradation of a protein applied to or produced by a plant comprising administering to the plant or a part thereof a peptide comprising indolicidin, Arg-Arg-Trp-Pro-Trp-Trp-Pro-Trp-Lys-Trp-Pro-Leu-Ile (Rev4) or a functional equivalent thereof.

2. The method of claim 1 wherein said functional equivalent comprises the formula:

X-X-Y-Y-Y-Y-Y-X-Y-Y-Y-Y; or

Y-Y-Y-Y-X-Y-Y-Y-Y-Y-Y-X-X

wherein each X is independently arginine, lysine or histidine; and

wherein each Y is independently tryptophan, glycine, alanine, valine, leucine, isoleucine, proline, phenylalanine, methionine, or lysine.

3. The method of claim 1 wherein said peptide is Ser-Arg-Arg-Trp-Pro-Trp-Trp-Pro-Trp-Lys-Trp-Pro-Leu-Ile (Ser-Rev4-OH).

4. The method of claim 1 wherein said peptide is Arg-Arg-Trp-Pro-Trp-Trp-Pro-Trp-Lys-Trp-Pro-Leu-Ile-Gly-Gly-Gly-Tyr-Asp-Pro-Ala-Pro-Pro-Pro-Pro-Pro (Rev4-

C-Fusion).

5. The method of claim 1 wherein said protein is an antipathogenic agent.

6. The method of claim 5 wherein said protein is an antibacterial agent

7. The method of claim 5 wherein said protein is an antifungal agent.

8. The method of claim 5 wherein said protein is an antiviral agent.

9. The method of claim 5 wherein said protein is an insecticidal agent.

10. The method of claim 1 wherein said protein is selected from the group consisting of Magainins, reverse Magainins, PGLc, reverse PGLc, PI's, reverse PI's, Cecropins, reverse Cecropins, Sarcotoxins, reverse Sarcotoxins, Bombinins, reverse Bombinins, XPFs, reverse XPF's, Thionins, reverse Thionins, Defensins, reverse Defensins, Melittins, reverse Melittins, PGL *a*, and reverse PGLa, Dermaseptins, reverse Dermaseptins, Histatins, reverse Histatins, peptides derived from pig myeloid cells, peptides derived from human neutrophil cathepsin G, antimicrobial peptides from bovine neutrophils, Seminalplasmin, antimicrobial derived from

Lactoferrin, Drosocin, Tachyplesins, reverse Tachyplesins, Maize Basic Peptide I, Tracheal antimicrobial peptides, Antimicrobial peptides from seeds of amaranth, antimicrobial peptides from seeds of Mirabilis jalapa, Ranalexin, Brevenin, Subtilin, Nisin, Epidermin, Lactacin 481, and basic amphipathic peptides.

11. The method of claim 1 wherein said protein is selected from the group consisting of enzymes, pharmaceuticals, agricultural products, feed additives or food additives.

12. The method of claim 1 wherein said peptide is Rev4 and said protein is selected from the group consisting of Magainins and reverse Magainins.

13. The method of claim 1 wherein said administering comprises transforming said plant or part thereof with an non-native DNA comprising a sequence encoding said peptide.

14. The method of claim 1 wherein said administering comprises spraying said plant or part thereof with a composition comprising said peptide functional equivalent.

15. The method of claim 14 wherein said composition further comprises said protein.

16. The method of claim 14 wherein said spraying said plants or parts thereof is conducted after said plant or part thereof is harvested.

17. The method of claim 14 wherein said spraying said plants or parts thereof is conducted during processing or formulation of said plant or part thereof.

18. The method of claim 1 wherein said protease is a plant protease.

19. The method of claim 1 wherein said protease is a bacterial protease.

20. The method of claim 1 wherein said protease is a viral protease.

21. The method of claim 1 wherein said protease is a fungal protease.

22. The method of claim 1 wherein said protease is an insect protease.

23. The method of claim 1 wherein said plant or part thereof is selected from the group consisting of maize, tomato, turfgrass, asparagus, papaya, sunflower, rye, beans, ginger, lotus, bamboo, potato, rice, peanut, barley, malt, wheat, alfalfa, soybean, oat, eggplant, squash, onion, broccoli, sugarcane, sugar beet, beets, apples, oranges, grapefruit, pear, plum, peach, pineapple,

grape, rose, carnation, daisy, tulip, Douglas fir, cedar, pine, spruce, peas, cotton, flax, coffee and tobacco.

24. The method of claim 1 wherein said peptide is fused with at least one other peptide.

25. The method of claim 1 wherein said peptide is conjugated with at least one other peptide.

26. The method of claim 1 wherein said peptide is administered by applying said peptide to said plant or part thereof and said peptide is crosslinked with at least one other peptide.

27. A method of inhibiting the growth of a plant pathogen comprising administering to a plant or part thereof Rev4 or a functional equivalent thereof.

28. A peptide comprising Rev4 (Arg-Arg-Trp-Pro-Trp-Trp-Pro-Trp-Lys-Trp-Pro-Leu-Ile) (SEQ ID NO:4) or a functional equivalent thereof.

29. A nucleic acid molecule comprising a sequence encoding Rev4 (Arg-Arg-Trp-Pro-Trp-Trp-Pro-Trp-Lys-Trp-Pro-Leu-Ile) (SEQ ID NO:4) or a functional equivalent thereof.

30. The nucleic acid molecule of claim 29 comprising AGGAGATGGCCTTGGTGGCCTTGGAAATGGCCTCTTATT (SEQ ID NO:15) or a complement thereof.

31. The nucleic acid molecule of claim 29 which is DNA.

Sub A2

32. The nucleic acid segment of claim 29 which is RNA.

33. A nucleic acid construct, comprising from 5′ to 3′, a transcriptional initiation region functional in plants, a nucleic acid sequence encoding Rev4 or a functional equivalent thereof, and a transcriptional termination sequence.

34. The nucleic acid construct of claim 33 further comprising a regulatory nucleic acid sequence.

35. The nucleic acid construct of claim 33 further comprising a reporter gene.

Sub A3

36. A transgenic plant comprising a nucleic acid including a sequence encoding Rev4 of a functional equivalent thereof.

37. The transgenic plant of claim 36 wherein said sequence encodes a functional equivalent or Rev4 comprising the formula:

X-X-Y-Y-Y-Y-Y-Y-X-Y-Y-Y-Y

wherein each X is independently arginine, lysine or histidine; and

wherein each Y is independently tryptophan, glycine, alanine, valine, leucine, isoleucine, proline, phenylalanine, methionine, or lysine.

38. The transgenic plant of claim 36 further comprising at least one nucleic acid sequence encoding a protein of agronomic interest.

39. A method of making a plant, comprising preparing a plant having a genome that contains a DNA sequence encoding Rev4 or a functional equivalent thereof wherein said sequence is expressed.

40. The method of claim 39 comprising stably transforming a protoplast with said DNA molecule, and generating the plant from the transformed protoplast.

41. The method of claim 39 comprising introducing the DNA molecule ~~into~~ plant tissue, and regenerating the plant tissue containing the DNA molecules.

42. The method of claim 39 wherein said plant further contains a DNA sequence encoding a protein of agronomic interest.

43. A seed derived from the plant of claim 36.

44. A plant cell comprising a nucleic acid sequence encoding Arg-Arg-Trp-Pro-Trp-Trp-Pro-Trp-Lys-Trp-

(SEQ ID NO: 4)
Pro-Leu-Ile (Rev4) or a functional equivalent thereof.

45. The plant cell according to claim 44 further comprising a nucleic acid sequence encoding an agronomic protein of interest.

46. A composition for use in protecting a peptide, polypeptide or protein from protease degradation, comprising Rev4 or a functional equivalent thereof and a carrier.

47. The composition of claim 46 wherein said functional equivalent comprises the formula:

X-X-Y-Y-Y-Y-Y-Y-X-Y-Y-Y-Y

wherein each X is independently arginine, lysine or histidine; and

wherein each Y is independently tryptophan, glycine, alanine, valine, leucine, isoleucine, proline, phenylalanine, methionine, or lysine.

48. The composition of claim 47 further comprising a protein of agronomic interest.